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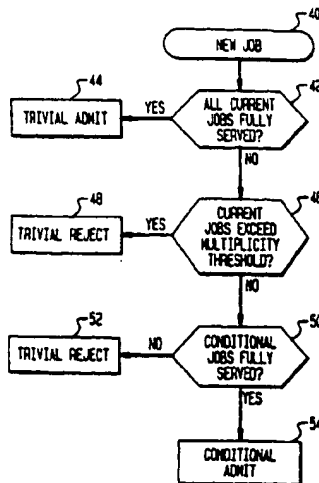
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(54) **Dynamic hierarchical resource scheduling for continuous media**

(57) An apparatus and method is provided that supports continuous media for conventional networked workstations and PC's. Described are user-level mechanisms and policies designed to give good, efficient multimedia service under the mild assumption that the operating system provides a preemptive real-time scheduling class that can be used to give CPU cycles to the multimedia processes in preference to other processes that are not time sensitive. There are no modifications to the operating system kernel and isochronous networks are not required. It suffices for an application to state that it wants to play a particular stream of a type known to the server (e.g. a file containing MPEG-1 video 320x240 pixels, 8-bit color, 30 frames per second), or for the application to specify a frame rate and an index describing the offset of each frame in a file.

**FIG. 2**



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# EUROPEAN SEARCH REPORT

Application Number  
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
D,X	COMPUTER JOURNAL, vol. 36, no. 1, 1993, pages 32-42, XP000360263 P. LOUGHER ET AL.: "The Design of a Storage Server for Continuous Media" * abstract * * page 32, right-hand column, line 6 - page 33, left-hand column, last line * * page 34, left-hand column, line 26 - line 50 * * page 34, right-hand column, line 11 - line 22 * * page 39, left-hand column, line 11 - page 40, right-hand column, line 44 * ---	1,7-10, 14,15	G06F9/46
A	OPERATING SYSTEMS REVIEW (SIGOPS), vol. 28, no. 2, April 1994, pages 51-64, XP000449103 LARS C. WOLF ET AL.: "The System Architecture of the Heidelberg Transport System" * abstract * * page 51, line 1 - line 13 * * page 52, line 4 - line 18 * * page 56, line 25 - page 57, line 10 * --- --/--	1,14,15	<div>TECHNICAL FIELDS SEARCHED (Int.Cl.6)</div> <div>G06F</div>
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18 April 1997	Examiner Wiltink, J
<div>CATEGORY OF CITED DOCUMENTS</div> <div> X : particularly relevant if taken alone  Y : particularly relevant if combined with another document of the same category  A : technological background  O : non-written disclosure  P : intermediate document  I : theory or principle underlying the invention  E : earlier patent document, but published on, or after the filing date  D : document cited in the application  L : document cited for other reasons  &amp; : member of the same patent family, corresponding document </div>			

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## EUROPEAN SEARCH REPORT

Application Number  
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	<p>PROCEEDINGS IASTED/ISMM SYMPOSIUM. DISTRIBUTED MULTIMEDIA SYSTEMS AND APPLICATIONS, HONOLULU, HI, USA, 15 - 17 August 1994, ISBN 0-88986-194-3, 1994, ANAHEIM, CA, USA, IASTED/ISMM-ACTA PRESS, USA, pages 194-197, XP000646519</p> <p>PIERRE G. JANSEN ET AL.: "Real-Time in Multimedia: Opportunistic Scheduling or Quality of Service Contracts?"</p> <p>* abstract *</p> <p>* page 196, right-hand column, line 12 - line 27 *</p> <p>* page 197, left-hand column, line 5 - line 13 *</p> <p>-----</p>	1,2,14, 15	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
The present search report has been drawn up for all claims			
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<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>&amp; : member of the same patent family, corresponding document</p>			

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